

Training for Research in Medicine

—A Change in National Policy

DURING THE PAST 25 YEARS biomedical research has been remarkably expanded in the United States, largely because of increasing federal support. At the present time the Federal Government, predominately through the National Institutes of Health, supplies more than 60 percent of the estimated 2.7 billion dollars invested annually in biomedical research. A revolution in modern biology and in medical science has resulted. The success of this national policy can be measured in the major advances which have occurred in molecular biology, immunology, virology, pharmacology and genetics, and in the application of these and other disciplines to the prevention and treatment of disease. It is this policy which has made biology the most exciting science in the second half of the twentieth century, occupying the special position held by physics during the first half. More important, it allows for a rational approach to the major health care problem in the United States—that is, the continued existence of major diseases for which we can do little at present.

Excellence in research does not automatically follow the flow of funds into a field. It requires the selection and training of the comparatively small number of scientists capable of unusual research creativity. In recognition of this fact the Federal Government has supported the training of biomedical scientists in parallel with its investment in direct support of research itself over the past 20 years. This support has been largely through the instruments of training grants, established in those basic science or clinical departments judged to be outstanding by peer review, and through fellowships, given directly to the trainee. That policy is now being abruptly discontinued. The President's budget calls for cessation of federal support for research training, with the phase-out to be completed within the next few years.

What lies behind this decision and what consequences are likely to flow from it? The proximate cause is the laudable desire to reduce federal spending, and the amounts invested in training (approximately \$180 million in training grants and fellowships in fiscal 1973) are not inconsequential. Even in deflated 1973 dollars this investment is above the noise level in the federal budgetary process. On the other hand, investment in cancer research and in research in heart disease is being simultaneously increased, so there is some selectivity in the elimination of support of training in the biomedical research budget. Some in the executive branch of government argue that there are enough scientists for anticipated future needs. Furthermore, education represents a certain equity for the recipient and he should make this initial investment from personal resources. In other words, no special incentive of training support is required. Moreover, in this view, reliance should be placed on the normal pull of market forces to produce the number, variety, and quality of biomedical scientists necessary for our future research effort.

The training grants and fellowships have not only supported those destined for a research career. They have also underwritten much and in some areas most of the specialty training in clinical disciplines—cardiology, gastroenterology, nephrology, neurology, and psychiatry, for example. The new budgetary decisions will sharply reduce the opportunity for such training in the United States, unless alternate means of support are identified. The bed-costs in teaching hospitals cannot absorb this additional fiscal burden, since they are already strained in the support of intern and resident stipends. Few young physicians can afford two or three additional years of training without stipend support as an addendum to normal residency requirements. The result will be decreased attractiveness for a research career and for science-based specialty training. In part, perhaps, this is the purpose of the legislation.

Is such a change in policy in the public interest? It is clear that the decision to discontinue federal investment in research training will be severely disruptive to medical education. The nation's medical schools are just beginning to assess the

impact in loss of operating budgets and in threat to educational programs. More important are the implications for the future of biomedical research. As noted earlier, the major health care problem of our time is the continued existence of diseases for which we do not have adequate measures for prevention or treatment. Even if we had a perfect system for distribution of health services, rheumatoid arthritis, schizophrenia, cancer, and coronary artery heart disease would remain as major threats to health. The only rational approach to finding answers to these and other diseases, which ultimately kill us all, is through medical research. Research in the biomedical sciences is therefore a form of national defense. Only a small number of medical school graduates, approximately 5 per-

cent, enter careers of medical research. The national policy of the past 25 years—that of investing both in scientists as well as science—has created a magnificent organization or instrument for research in the United States. The decision to discontinue the policies which have brought us to our current successes seems both shortsighted and unwise. There is an immense opportunity to apply advances in biology to the elucidation of disease processes during the last quarter of the twentieth century. This opportunity should not be lost through cancellations of a successful program of training the required medical scientists.

LLOYD H. SMITH, JR., MD
*Professor and Chairman
Department of Medicine
University of California, San Francisco*

Proof of Effectiveness in Health Care

PROOF OF EFFECTIVENESS is a well-established concept in medical science. It is the goal of much research in the scientific aspects of medical care. Its application in medical practice and in other aspects of health care is less well-established but there are hopeful signs that this will occur. It is tempting to believe that this will be because the objectivity of science is winning greater acceptance on the basis of its inherent rationality in an irrational world, but it is far more likely that the really compelling reason is costs. The dollars available for health care are limited and more of them should be used where there is proof of effectiveness and fewer where there is not. A beginning is to be seen in the attempts of the Federal Food and Drug Administration to relate the availability and use of drugs and pharmaceuticals more closely to proof of their effectiveness, and it is easy to foresee proof of effectiveness playing a larger and larger role in the work of the federally mandated Professional Standards Review Organizations (PSRO's). In a sense the growing public concern that health professionals show evidence of their continuing competence may be viewed as another expression of the trend to proof of effectiveness. All of this is healthy and, if done well, will go a long way to achieve the seemingly paradoxical aims of improving the quality and reducing the costs of medical care at the same time.

The concept of proof of effectiveness strikes

right to the heart of many of the scientific and social problems in health care. Much of the science and much more of the sociology, the economics and the politics of health care are dominated by widely held professional or public opinion, belief or even custom for which there is precious little proof of effectiveness. Many of these widely accepted views are of long standing and may have some basis in the human experience, but others in fact have been created artificially by the overstating and overselling of medical progress and by skillful public relations techniques designed to instill a habit or belief into public opinion or public behavior for whatever purposes. It is certainly timely and perhaps even overdue that many of these professional and public opinions, beliefs and practices be challenged for proof of their effectiveness in health care. This is beginning to occur. Certain long used and expensive medical treatments are being abandoned for lack of proof of effectiveness. Certain time-honored, costly and often mutilating surgical procedures are being seriously questioned as to their effectiveness. And even the effectiveness of some preventive measures such as the more or less sacred annual physical examination is under study. All this is as it should be and the effect should be to improve both the quality and cost of care. It should and will be continued.

However, a warning note should be sounded. Humans, whether sick or well, are not of one mold and each varies in some way from whatever norm is established. Humans make many decisions emotionally and these are often irrational rather than rational decisions. And not only are humans